

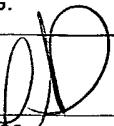


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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,329	09/17/2003	Steven G. Goebel	GP-303480	4211
7590	11/16/2004		EXAMINER	
CARY W. BROOKS			CHANAY, CAROL DIANE	
General Motors Corporation			ART UNIT	PAPER NUMBER
Mail Code 482-C23-B21				
P.O. Box 300			1745	
Detroit, MI 48265-3000			DATE MAILED: 11/16/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/664,329	GOEBEL, STEVEN G. 	
	Examiner Carol Chaney	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 September 2003.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-52 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1-41 is/are allowed.  
 6) Claim(s) 42-52 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 17 September 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____ .  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____ .                                  |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 42-44, and 48-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Perry, US Patent 6,391,485.

Perry discloses a fuel cell system (a device) which includes a fuel cell (11), an anode flowpath (43, 62), and a cathode flowpath, (47, 60, 64', 52') which includes a recirculation loop. The system further includes a plurality of valves including a fuel supply valve (44), a valve in the recycling loop (66'), a fuel inserting valve (54") disposed between the anode flowpath and the cathode flowpath, and a purge valve (66"). With regards to claim 43, the system includes a pressurized fuel source and a pressurized oxygen source. (See column 4, lines 27-34.) With regards to claim 44, the system disclosed by Perry includes a cathode exit valve (68) and a valve (54") which is disposed between the oxygen source and the pressure source of the fuel, and thus is a cathode flowpath recycle valve. With regards to claim 48, the Perry invention includes membrane electrolyte assemblies having catalyst on the cathodes. (See column 2, lines 30-31.) With regards to claims 49 and 50, the Perry invention includes a controller (72) which is connected to the system control valves and sensors, and regulates fluid

flows. (See column 5, lines 25-58.)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 45-47, and 51-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perry.

As discussed above, Perry discloses applicants' invention essentially as claimed, with the exception that Perry does not specifically disclose an air compressor or a combustor as part of the system, and does not disclose the fuel cell system mounted in a vehicle. Perry teaches the oxidant supply may be "air or a pressurized oxygen source" (column 4, lines 32-34), which one of ordinary skill in the art would understand to encompass the well-known air compressor. Perry discloses similar fuel cells as promising for automotive power sources (column 1, lines 11-22) and therefore, the use of the fuel cell disclosed by Perry in automotive applications would have been obvious to one of ordinary skill in the art.

***Allowable Subject Matter***

Claims 1-41 are allowed.

The prior art does not teach or fairly suggest methods of operating a fuel cell in

which fuel is introduced into an oxidant recirculation loop, the fuel is reacted with recycled oxidant until the oxidant fluid becomes substantially oxygen-depleted, and then introducing the oxygen-depleted fluid into the anode flowpath. The nearest prior art of Reiser et al. US Patent 6,312,842 discloses a fuel cell system which includes a cathode recycle loop (110) and a fuel inlet with a valve (116) which selectively permits anode exhaust to enter the oxidant passage (38). However, the prior art of Reiser et al. does not suggest reacting fuel introduced into the oxidant recycle loop until the recycle fluid is substantially oxygen-depleted. Further, the prior art of Reiser et al. does not suggest introducing the substantially oxygen-depleted fluid into anode flow path.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Clingerman US Patent 6,376,112

Reiser et al., US 2002/0076583 A1

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Carol Chaney  
Primary Examiner  
Art Unit 1745

14 November 2004